REMARKS

This is in response to the Office Action dated August 9, 2006.

In the Office Action, claims 111-114 and 116-130 are noted as pending in the application, and claims 111-114, 116-120 and 127-130 stand rejected. Claims 115 and 128 are canceled, and claims 121-126 are withdrawn. No claims are objected to and no claims are allowed. Claim 111 is amended and new claims 131-138 are added by this amendment. Various other amendments are made for claim dependency and for proper antecedent basis.

Applicants note that the priority claim is complete, and acknowledge the Notice of References Cited.

Rejections

In the Office Action, the Examiner rejects claims 111-114 and 116-130 under 35 U.S.C. 103(a) as being unpatentable over *Enright* et al., (U.S. Patent No. 6,583,813) in view of *Jain* et al. (U.S. Patent No. 6,144,375). For the reasons discussed below, Applicants respectfully traverse the rejections.

Initially it is noted that the Examiner acknowledges that *Enright*, the primary reference, is silent regarding selectively accessing playback of video signals and live video signals. Also, *Enright* does not teach or suggest a low latency system, and packetized video streams from a camera streamer associated with a camera has not been found in *Enright*.

The Office Action also cites *Jain* as a secondary reference. According to the Office Action, *Jain et al.* disclose that a server is configured to access the stored signals and to access the first video signals to selectively provide playback second video signals and live second video signals respectively (citing *Jain* at 8:34-59). As noted below, *Jain* does not teach or suggest a low latency live video process, and in fact teaches that video is of very little interest to a user in the *Jain* system. Additionally, while *Jain* mentions live signals, little information is provided about the form of the live signals. Additionally, it is well known that events colloquially stated to be 'live' are in

fact viewed with a relatively significantly degree of latency introduced, for example, by processing architecture and transmission path, and for the purposes of censoring. Clearly, Applicants have taught inventions patentable over *Jain* taken singly or in combination with any other reference of record.

Also according to the Office Action, "an advantage of providing playback or live signals (for example of a football game like *Jain* mentions throughout the patent) is that while watching live signals the user can decide they want to view an "instant-replay" to review video they just watched (26:47-67)." [Office Action, Section 6, page 3.] In this passage, it is clear that *Jain* is discussing data that is stored in a database, and nothing is described in the passage about live signals. [See, 26:52.] Therefore, it is not seen how *Jain* (singly or in combination) renders any of the present inventions obvious.

The Office Action also states regarding claim 30, some of the limitations of which have been incorporated into claim 111, that *Enright* and *Jain* are silent with regards to packetizing the video before placing the video onto a network. The Office Action goes on and says "Official Notice" is taken that it was well known at the time the invention was made to packetize video before placing it on a network. There is no evidence that as of August 12, 1999, it was well known that video was packetized by a camera streamer before being placed on a network. Additionally, claim 111 has been amended to recite low latency live video signals packetized by a camera streamer, and such apparatus is not taught or suggested by the prior art, taken singly or in combination.

Applicant's Disclosure

Applicants disclose a system for low-latency remote video monitoring of one or more areas or processes of interest. An example referenced herein of an area of interest is a detention center, and a process of interest referenced herein includes a smelter for molten metal. As shown in FIG. 2, the system includes a plurality of cameras, each of which is positioned respectively at or adjacent an area or process of interest. Camera streamers 4 connect the cameras 2 to a computer communications network 6. Each camera may have a respective streamer. [See, FIGS. 2-3 and page 13, lines 20-21.] A computer server such as a video server 8 is connected to the

network by means of a suitable interface. A computer terminal in the form of a client computer 10 is also connected to the network 6 for communication with the network. Each camera may provide an output, for example in analog form, to respective camera streamers 4, but cameras with compressed or uncompressed digital outputs can also be used. Each camera streamer 4 receives the signal from the respective camera and converts it to a predetermined digital format, which is then packetized into a suitable network format and placed on the network. In one example, the data is compressed. [See, Specification, page 13, line 16, through page 15, line 8.] Once on the network, the signal can be picked up by a client without having to be processed by a web server.

In one example, the video server 8 includes storage means in the form of a hard disk drive 16 (FIG. 5) for storing the streamed video taken from the network 6. [See, Specification, page 15, lines 17-22.] The video server can receive and store first video signals according to a predetermined schedule. The server can selectively access both the stored signals and also the first video signals, and selectively provide playback second video signals and live second video signals, respectively. [See, Specification, at page 12, lines 3-6, and the accompanying Figures and text.] Therefore, a client computer terminal can be used to selectively display either live video feeds from the cameras or playback video feeds from storage.

The live video feed can be viewed by the client system with a relatively low latency. As a result, processes, in one example the processing of molten steel, and area monitoring, in one example security areas, can be monitored in real time because of the low latency. [See, Specification at page 5, lines 7 et seq.] For example, positioning of a crucible of molten steel and pouring of the steel must be monitored closely during the process, and delay in seeing and responding to problems may lead to undesirable consequences. In security areas, it may be important to know the current status of a location at the precise time a door is locked or unlocked, and any delay in accurately seeing an area could lead to a loss of security.

One way to achieve low latency is shown in the present application. For example, video cameras and their camera streamers can be coupled to one or more video servers and then to the client without having to go to or through a web server.

See, for example, FIG. 8 in the present application. In FIG. 8, live video can be coupled by the video server through the camera manager directly to the client without being first processed by the web server. Additionally, when the video stream from the camera streamer is packetized, it can be more easily processed and the latency can be kept suitably low. Likewise, when a camera streamer is associated with only one camera, the latency can be kept lower than when a camera streamer is assigned to multiple cameras.

New claims 135 and 138 are supported by the disclosure associated with FIG. 8 and the first full paragraphs on page 28 and page 29.

Cited Prior Art

As previously noted in Applicants' July 5, 2006 response, *Enright* shows a system and method for capturing image data that captures images responsive to program sequences. The sequences are performed on a periodic basis as well as in response to inputs corresponding to alarm conditions and transactions conducted at automated banking machines or other devices. Image data may also be captured in response to image conditions, including the sensing of motion or loss of usable video from selected cameras. Image data is stored in connection with data corresponding to the circumstances associated with a triggering event. Stored data may be searched by one or more parameters. Parameters include data stored in association with each image, types of events causing image data to be stored, as well as other image conditions in stored images.

However, nothing in *Enright* teaches or suggests providing live video to a client. While the Examiner mentions only that *Enright* is not "selectively accessing playback of video signals and live video signals," [emphasis added], *Enright* fails to suggest **ANY** live video play. *Enright* has no teaching or suggestion of monitoring low-latency, live video, and one skilled in the art would not be motivated to consider the teaching of *Enright* as relevant to the present inventions. Storing video signals for later viewing is very long latency. Additionally, there is no teaching or suggestion of modes for remote

control in the forms taught by Applicants, and there is no teaching or suggestion of streaming video onto a network.

Jain et al. disclose methods and apparatus for interactively viewing a "real-world environment". *Jain* is not a low-latency system, and in fact gives little information about its incoming video or about allowing an end-user to view live video. According to *Jain*, a "viewer" includes a user interface and various windows and displays relating to "multimedia events". According to the Field of the Invention, *Jain* relates to digital video imaging systems such as for dynamically interacting with and viewing content-based video images in a multi-perspective video imaging system. [See, column 1, lines 14-17.] A central part of the system includes a "capture stage" or "capture system", sometimes referred to in the specification as "CS" (see also FIG. 6-A). "The capture stage annotates and synchronizes the filtered video data with other data types such as audio, data (e.g., statistical information), and other media types to create the database that is accessed by the present inventive viewing method and apparatus." [See, column 6, lines 9-13.] It appears that the capture stage is represented in FIG. 4 and FIG. 6-A. In both of the configurations shown in those Figures, no live video is shown going to the viewer or client. It is noted below that the "user" sees "raw input" through a System User Interface 320, but the form of that raw input is not specified.

The Examiner cites column 8, lines 34-59, of *Jain* for the proposition that a "server is configured to access . . . stored signals and to access . . . first video signals to selectively provide playback second video signals and live second video signals respectively." Nothing in *Jain* teaches or suggests a low-latency video monitoring system. It refers to "a system architecture of a content-based, live or recorded information system," and the system, called a presence system 200, "blends a myriad of technologies such as heterogeneous sensor fusion, live-media delivery, tele-presence, and information processing." According to *Jain*, a special system architecture "is required to interpret each camera sequence in real-time and to assimilate their results in real-time so that the Multiple Perspective Interactive (MPI) can properly model the environment to allow proper camera selection. [See, column 7, lines 46-53.] However, *Jain* recognizes that the system does not operate with a low latency, for example when

Jain notes that "it is possible to build environmental models in real-time, (i.e., video refresh rates), or in something approaching real-time." [See, column 7, lines 16-19, emphasis added.] *Jain* clearly recognizes that significant processing time occurs in the system, which makes it a long latency system. Additionally, as shown in FIG. 3, all of the sensor information from the sensors 202 goes through the processor 200 before being sent to the user at 212, significantly increasing the latency of the signals. *Jain* is not a low latency system.

Significant processing time occurs in *Jain* because the "presence system" 200 "integrates all of the sensor inputs obtained from a plurality of sensors 202 into a composite model of the live environment." Thereafter, a viewer/user can select a given sensor 202 (such as a video source) by requesting the video source, and the request is processed by streaming the requested information to a user by a distribution network 212. [See, column 8, lines 60-63, and column 9, lines 60-67.] However, there is no indication that the video is anything other than stored video. Additionally, this processing results in significant latency. While *Jain* mentions that some user applications may include such things as security monitoring of a small commercial environment, in which users may not constantly view a given sensor stream but instead alternate among a group of sensors (cameras) [column 10, lines 5-14], nothing in *Jain* teaches or suggests how live, real-time video streams are viewed by a user. Moreover, nothing in *Jain* teaches or suggests viewing low-latency video.

In fact, everything in *Jain* suggests that any live video has relatively long latency periods. For example, and describing FIG. 4, with respect to the capture/filter process, the capture/filter process can accept and synchronize diverse input data information streams including multiple "live" video information streams, multiple "live" audio information streams, play-by-play audio, database information and other live inputs, and all such information is linked together by the capture/filter process during the creation of a database. [See, column 16, lines 35-47.] This capture/filter process is described in more detail while admitting that there is a "tremendous volume of data" requiring "massive data-processing and storage capability." *Jain* appears to eliminate the problem by a filtering function that "helps eliminate or "strip-away" multi-media data

(largely video information) that is relatively unimportant to the end-user." [See, column 17, lines 60-67, emphasis added.] Clearly, *Jain* produces significant latency periods, and in fact states that video is relatively unimportant to the end-user. Therefore, *Jain* teaches away from the present inventions, and also teaches away from its combination with any reference that would be used to reject the present claims. *Jain* is not combinable with any reference of record to teach or suggest the present inventions.

It is also noted that *Jain* shows in the drawings video going to a viewer or client only through a Highlight Reel Publisher 306. [See, FIGS. 4 and 6-A.] The Highlight Reel Publisher 306 is described as communicating with a client over the Internet, and the client apparently communicates "with both a real video server 350 and an Internet world-wide web server 352." [Column 21, lines 49-52.] The real video server 350 is described as downloading video clips to the viewer in response to user queries, and the Web server 352 provides all other information including instruction for building and maintaining a Web page event information and real video information. It is not seen how *Jain* teaches or suggests any type of low-latency system. Clearly Applicants have taught inventions patentable over *Jain*.

Claims

Consider now the claims in the application. Claim 111 is an independent apparatus claim and recites in part:

> "A digital video management system for low-latency remote live video monitoring of one or more areas or processes of interest, the system including:
>
> "a plurality of cameras, each camera having a respective camera streamer configured to packetize the camera output and to provide low-latency live first video signals to a computer communications network;
>
> "a video server configured for linking to the network, configured to receive the first video signals and configured to be responsive to a

predetermined schedule for storing on storage media associated with the server at least some of the first video signals, wherein the server is configured to access the stored signals and to access the low-latency live first video signals to selectively provide packetized playback second video signals and packetized low-latency live second video signals, respectively;

"at least one client computer terminal configured for linking to the network for providing the predetermined schedule and for receiving either of the second signals."

None of the cited references taken singly or in combination teach or suggest the claimed combination, the recited elements quoted above, or the "each camera having a respective camera streamer configured to packetize the camera output and to provide low-latency live first video signals to a computer communications network". Neither of the cited references are low latency systems, and neither teach or suggest camera streamers configured to packetize camera output.

The claims 112-114, 116-120, 127-129 and 131-134 are dependent directly or indirectly from independent claim 111 and are asserted as being patentable for the same reasons as discussed above with respect to claim 111, for the additional combinations in the dependent claims as well as for the additional limitations recited in the dependent in claims. Note for example claim 119, reciting in part "wherein the terminals provide over the network respective camera control commands to the video server and the video server processes those commands and generates control signals that are sent to the relevant camera via the network." None of the references teach or suggest the combination or a video server process the commands and generating control signals that are sent to the relevant camera via the network. Note also claim 127, reciting in part "wherein the first video signals are compressed by the cameras." There is no teaching or suggestion of compression by the cameras. In *Jain*, video stream is taken into the Quad splitter 317, which produces composite video. There is no showing in the Office Action that it was well known in 1999 for cameras to compress the video.

Claim 135 is a new independent apparatus claim and recites in part:

> "a plurality of cameras, each camera having a respective camera streamer configured to packetize the camera output to provide respective low-latency live video signals to a computer communications network;
>
> "a plurality of video servers configured to be in communication with the network, each video server having a respective camera manager configured to manage a respective subset of said plurality of cameras, wherein each video server is configured to receive the video signals from said subset of the cameras and, in response to receiving a command from the web server, to provide access to one of said received video signals to a client computer;
>
> "a web server configured to be in communication with the network, . . . ; and
>
> "a client computer terminal configured to be in communication with the network and for generating a command to the web server and for receiving from the video server the video signal."

None of the cited references taken singly or in combination teach or suggest the claimed combination, the recited elements quoted above, or "each camera having a respective camera streamer configured to packetize the camera output to provide respective low-latency live video signals to a computer communications network" or "a client computer terminal configured to be in communication with the network and for generating a command to the web server and for receiving from the video server the video signal".

The claims 136-137 are dependent directly or indirectly from independent claim 135 and are asserted as being patentable for the same reasons as discussed above

with respect to claim 135, for the additional combinations in the dependent claims as well as for the additional limitations recited in the dependent in claims.

Claim 138 is an independent method claim and recites in part:

> "at each of a plurality of camera streamers, receiving output from an associated camera, and packetizing said output to provide respective low-latency live video signals to a computer network;
>
> "at a plurality of video servers in communication with the network, receiving the video signals from a subset of said plurality of streamers and, in response to receiving a command from the web server, providing access to one of said received video signals;
>
> "at a web server, in communication with the network, receiving a command from a client computer terminal, processing the command to determine a camera to which the command relates and forwarding the command to the corresponding video server; and
>
> "at a client computer terminal in communication with the network generating a command to the web server and receiving the video signal from a video server."

None of the cited references taken singly or in combination teach or suggest the claimed combination, the recited elements quoted above, or the "receiving output from an associated camera, and packetizing said output to provide respective low-latency live video signals to a computer network" or "generating a command to the web server and receiving the video signal from a video server".

Reconsideration of the application and claims in view of the foregoing amendments and remarks is respectfully requested. Early notice of allowance thereof is earnestly solicited.

This response is being filed with an RCE and a Three-Month Extension of Time.

Please charge any additional fees that may be due or credit any overpayments to our deposit Account No. 50-0655. If a petition is required in conjunction with this paper, please consider this a request for such a petition.

Respectfully submitted,

Dated: February 8, 2007

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